

WHAT IS CLAIMED IS:

1. An audio device comprising:

a correction circuit having given transfer functions, which audio device supplies, through said correction circuit, right- and left-channel input audio signals on which head related transfer functions are superimposed, to right- and left-channel speakers located in front of a hearing position of a listener in a reproduction sound field space, wherein

correction transfer functions obtained by an inverse matrix of a matrix of which the elements are the following first to fourth transfer functions are implanted in said correction circuit;

a first transfer function featured by a sound field characteristic of a space ranging from a left-channel speaker to the left ear of the listener when said left-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space,

a second transfer function featured by a sound field characteristic of a space ranging from a left-channel speaker to the right ear of the listener when said left-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space,

a third transfer function featured by a sound field characteristic of a space ranging from a right-channel speaker to the left ear of the listener when said right-channel speaker

is disposed in an anechoic room as a model of a component layout in said reproduction sound field space, and

a fourth transfer function featured by a sound field characteristic of a space ranging from a right-channel speaker to the right ear of the listener when said right-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space.

2. An audio device comprising:

a correction circuit having given transfer functions, which audio device supplies, through said correction circuit, right- and left-channel input audio signals on which head related transfer functions are superimposed, to right- and left-channel speakers located in front of a hearing position of a listener in a reproduction sound field space, wherein

said correction circuit includes first to fourth operator circuits, and first and second adder circuits, and correction transfer functions obtained by an inverse matrix of a two-row and two-column matrix of which the elements are the following first to fourth transfer functions are implanted in said first to third operator circuits;

said first transfer function is obtained from a third impulse response series, which is extracted from a second impulse response series of a first impulse response series, which said second impulse response series is featured by a sound

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field characteristic from a left-channel speaker to the listener when said left-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space, said first impulse response series being featured by a sound field characteristic of a space ranging from a left-channel speaker to the left ear of the listener when said left-channel speaker is disposed in said reproduction sound field space,

said second transfer function is obtained from a sixth impulse response series, which is extracted from a fifth impulse response series of a fourth impulse response series, which said fifth impulse response series is featured by a sound field characteristic of a space ranging from a left-channel speaker to the right ear of the listener when said left-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space, said fourth impulse response series being featured by a sound field characteristic of a space ranging from a left-channel speaker to the right ear of the listener when said left-channel speaker is disposed in said reproduction sound field space,

said third transfer function is obtained from a ninth impulse response series, which is extracted from an eighth impulse response series of a seventh impulse response series, which said eighth impulse response series is featured by a sound field characteristic of a space ranging from a right-channel

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speaker to the left ear of the listener when said left-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space, said seventh response series being featured by a sound field characteristic  
5 of a space ranging from a right-channel speaker to the left ear of the listener when said right-channel speaker is disposed in said reproduction sound field space, and

said fourth transfer function is obtained from a 12th impulse response series, which is extracted from an 11th  
10 impulse response series of a 10th impulse response series, which said 11th impulse response series is featured by a sound field characteristic of a space ranging from a right-channel speaker to the right ear of the listener when said right-channel speaker is disposed in an anechoic room as a model of a component  
15 layout in said reproduction sound field space, said 10th response series being featured by a sound field characteristic of a space ranging from a right-channel speaker to the right ear of the listener when said right-channel speaker is disposed in said reproduction sound field space, and

20 said first adder circuit adds together output signals of said first and third operator circuits when said left-channel input audio signal is input to said first operator circuit, and said right-channel input audio signal is input to said third operator circuit, and

25 said second adder circuit adds together output signals

of said second and fourth operator circuits when said left-channel input audio signal is input to said second operator circuit, and said right-channel input audio signal is input to said fourth operator circuit.

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3. The audio device according to claim 2, wherein

said third impulse response series is extracted from a part of said first impulse response series within a period of

time taken for a damping amplitude of said second impulse response series decreases to approximately 0 (zero),

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said sixth impulse response series is extracted from a part of said fourth impulse response series within a period of time taken for a damping amplitude of said fifth impulse response series decreases to approximately 0 (zero),

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said ninth impulse response series is extracted from a part of said seventh impulse response series within a period of time taken for a damping amplitude of said eighth impulse response series decreases to approximately 0 (zero), and

said 12th impulse response series is extracted from a part of said 10th impulse response series within a period of time taken for a damping amplitude of said 11th impulse response series decreases to approximately 0 (zero).

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4. The audio device according to claim 2, wherein

said third impulse response series is extracted by a

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window function in which said first impulse response series is featured by an envelop of said second impulse response series,

said sixth impulse response series is extracted by a  
5 window function in which said fourth impulse response series is featured by an envelop of said fifth impulse response series,

said ninth impulse response series is extracted by a window function in which said seventh impulse response series is featured by an envelop of said eighth impulse response series,  
10 and

said 12th impulse response series is extracted by a window function in which said 10th impulse response series is featured by an envelop of said 11th impulse response series.

15 5. An audio device comprising:

a correction circuit having given transfer functions, which audio device supplies, through said correction circuit, right- and left-channel input audio signals on which head related transfer functions are superimposed, to right- and  
20 left-channel speakers located in front of a hearing position of a listener in a reproduction sound field space,

storing means for storing correction transfer functions corresponding to a plurality of spatial regions; and

position detecting means for specifying a hearing  
25 position of the listener in said a plurality of spatial regions,

wherein

said correction transfer functions stored in said storing means, the said correction transfer functions specified according to a hearing position of the listener  
5 detected by said position detecting means are implanted in said correction circuit,

correction transfer functions, which are obtained in accordance with a plurality of spatial regions within a predetermined reproduction sound field space by an inverse  
10 matrix of a matrix of which the elements are the following first to fourth transfer functions are implanted in said correction circuit being determined in advance, and wherein

said first transfer function featured by a sound field characteristic of a space ranging from a left-channel speaker  
15 to the left ear of the listener when said left-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space,

said second transfer function featured by a sound field characteristic of a space ranging from a left-channel speaker  
20 to the right ear of the listener when said left-channel speaker is disposed in an anechoic room as a model of a component layout in said reproduction sound field space,

said third transfer function featured by a sound field characteristic of a space ranging from a right-channel speaker  
25 to the left ear of the listener when said right-channel speaker

is disposed in an anechoic room as a model of a component layout  
in said reproduction sound field space, and

said fourth transfer function featured by a sound field  
characteristic of a space ranging from a right-channel speaker  
5 to the right ear of the listener when said right-channel speaker  
is disposed in an anechoic room as a model of a component layout  
in said reproduction sound field space.

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